

WHAT IS CLAIMED IS

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1. An image decompressing method comprising the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to

10 which decomposition-level-type inverse wavelet transform is performed; and

c) decompressing given wavelet transform coefficients up to the decomposition level determined by said step b),

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wherein said step b) determines the decomposition level such that the wavelet transform coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said step a).

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2. The method as claimed in claim 1, wherein

25 the decomposition level determined by said step b) is

such that the size of the wavelet transform coefficients of the thus-determined decomposition level is immediately smaller than the size of decompressed image determined by said step a).

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3. The method as claimed in claim 1, wherein
10 the decomposition level determined by said step b) is such that the size of the wavelet transform coefficients of the thus-determined decomposition level is immediately larger than the size of decompressed image determined by said step a).

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4. The method as claimed in claim 1, further
20 comprising the step d) of performing size-change operation on the decompressed image obtained by said step c) so as to obtain an image having a size equal to the size determined by said step a).

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5 5. The method as claimed in claim 1, wherein
the wavelet transform coefficients to be decompressed by
said step c) comprise a code stream coded in accordance
with JPEG2000, Image Coding System (ISO/IEC, FCD 15444-
1).

10 6. The method as claimed in claim 4, further
comprising the step e) of performing interpolation
operation so as to obtain a bitmap image having the size
equal to the size determined by said step a) from the
size-changed image obtained by said step d).

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20 7. The method as claimed in claim 6, wherein
said step e) comprises the step of performing linear
interpolation.

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8. The method as claimed in claim 6, wherein said step e) comprises the step of using pixel values of pixels near pixels included in the decompressed image.

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9. An image decompressing method comprising the steps of:

10 a) determining a size of a decompressed image;
b) determining a decomposition level up to which decomposition-level-type inverse subband transform is performed; and

15 c) decompressing given subband transform coefficients up to the decomposition level determined by said step b),

wherein said step b) determines the decomposition level such that subband transform coefficients in the thus-determined decomposition level
20 have a size equal to or nearest to the size of the decomposed image determined by said step a).

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10. The method as claimed in claim 9, wherein
the decomposition level determined by said step b) is
such that the size of the subband transform coefficients
of the thus-determined decomposition level is
5 immediately smaller than the size of decompressed image
determined by said step a).

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11. The method as claimed in claim 9, wherein
the decomposition level determined by said step b) is
such that the size of the subband transform coefficients
of the thus-determined decomposition level is
15 immediately larger than the size of decompressed image
determined by said step a).

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12. The method as claimed in claim 9, further
comprising the step d) of performing size-change
operation on the decompressed image obtained by said
step c) so as to obtain an image having a size equal to
25 the size determined by said step a).

13. The method as claimed in claim 12,
further comprising the step e) of performing
interpolation operation so as to obtain a bitmap image
having the size equal to the size determined by said
5 step a) from the size-changed image obtained by said
step d).

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14. The method as claimed in claim 13,
wherein said step e) comprises the step of performing
linear interpolation.

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15. The method as claimed in claim 13,
wherein said step e) comprises the step of using pixel
20 values of pixels near pixels included in the
decompressed image.

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16. An image decompressing method comprising the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to

5 which decomposition-level-type inverse wavelet transform is performed; and

c) decompressing given wavelet transform coefficients up to the decomposition level determined by said step b),

10 wherein said step b) determines the decomposition level such that the wavelet transform coefficients in the thus-determined decomposition level have a size further smaller than the size of the wavelet transform coefficients in the decomposition level
15 immediately smaller than the size of the decomposed image determined by said step a).

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17. The method as claimed in claim 16, further comprising the step d) of producing a lower-frequency component from the LL-subband coefficients in the last decomposition level when the size determined by
25 said step a) is smaller than the size of said LL subband

coefficients in the last decomposition level.

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18. The method as claimed in claim 17,
wherein said step d) comprises the step utilizing the
decomposition-level-type wavelet transform formula used
in the relevant system as it is.

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19. The method as claimed in claim 17,
15 wherein said step d) comprises the step of averaging
adjacent pixels

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20. The method as claimed in claim 16,
further comprising the step d) of performing size-change
operation on the decompressed image obtained by said
step c) so as to obtain an image having a size equal to
25 the size determined by said step a).

21. The method as claimed in claim 20,
further comprising the step e) of performing
interpolation operation so as to obtain a bitmap image
having the size equal to the size determined by said
5 step a) from the size-changed image obtained by said
step d).

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22. The method as claimed in claim 16,
wherein the wavelet transform coefficients to be
decompressed by said step c) comprise a code stream
coded in accordance with JPEG2000, Image Coding System
15 (ISO/IEC, FCD 15444-1).

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23. An image decompressing method comprising
the steps of:

a) determining a size of a decompressed image;
b) determining a decomposition level up to
which decomposition-level-type inverse subband transform
25 is performed; and

c) decompressing given subband transform coefficients up to the decomposition level determined by said step b),

wherein said step b) determines the
5 decomposition level such that subband transform coefficients in the thus-determined decomposition level have a size further smaller than the size of the subband transform coefficients in the decomposition level immediately smaller than the size of the decomposed
10 image determined by said step a).

24. The method as claimed in claim 23,
15 further comprising the step d) of producing a lower-frequency component from LL-subband coefficients in the last decomposition level when the size determined by said step a) is smaller than the size of said LL-subband
20 coefficient in the last decomposition level.

25 25. The method as claimed in claim 24,

wherein said step d) comprises the step of utilizing the decomposition-level-type wavelet transform formula used in the relevant system as it is.

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26. The method as claimed in claim 24,
wherein said step d) comprises the step of averaging
10 adjacent pixels

27. The method as claimed in claim 23,
further comprising the step d) of performing size-change
operation on the decompressed image obtained by said
step c) so as to obtain an image having a size equal to
the size determined by said step a).
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28. The method as claimed in claim 27,
25 further comprising the step e) of performing

interpolation operation so as to obtain a bitmap image having the size equal to the size determined by said step a) from the size-changed image obtained by said step d).

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29. An image decompressing apparatus

10 comprising:

a size determining part determining a size of a decompressed image;

a level determining part determining a decomposition level up to which decomposition-level-type
15 inverse wavelet transform is performed; and

a decompressing part decompressing given wavelet transform coefficients up to the decomposition level determined by said level determining part,

wherein said level determining part determines
20 the decomposition level such that wavelet transform coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said size determining part.

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30. The apparatus as claimed in claim 29,
wherein the decomposition level determined by said level
determining part is such that the size of the wavelet
transform coefficients of the thus-determined
5 decomposition level is immediately smaller than the size
of decompressed image determined by said size
determining part.

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31. The apparatus as claimed in claim 29,
wherein the decomposition level determined by said level
determining part is such that the size of the wavelet
15 transform coefficients of the thus-determined
decomposition level is immediately larger than the size
of decompressed image determined by said size
determining part.

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32. The apparatus as claimed in claim 29,
further comprising a size-change part performing size-
25 change operation on the decompressed image obtained by

said decompressing part so as to obtain an image having a size equal to the size determined by said size determining part.

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33. The apparatus as claimed in claim 29, wherein the wavelet transform coefficients to be
10 decompressed by said step c) comprise a code stream coded in accordance with JPEG2000, Image Coding System (ISO/IEC, FCD 15444-1).

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34. The apparatus as claimed in claim 32, further comprising an interpolation part performing interpolation operation so as to obtain a bitmap image
20 having the size equal to the size determined by said size determining part from the size-changed image obtained by said size-change part.

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35. The apparatus as claimed in claim 34,
wherein said interpolation part performs linear
interpolation.

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36. The apparatus as claimed in claim 34,
wherein said interpolation part uses pixel values of
pixels near pixels included in the decompressed image.

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37. An image decompressing apparatus
15 comprising:
a size determining part determining a size of
a decompressed image;
a level determining part determining a
decomposition level up to which decomposition-level-type
20 inverse subband transform is performed; and
a decompressing part decompressing given
subband transform coefficients up to the decomposition
level determined by said level determining part,
wherein said level determining part determines
25 the decomposition level such that subband transform

coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said size determining part.

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38. The apparatus as claimed in claim 37,
10 wherein the decomposition level determined by said level determining part is such that the size of the subband transform coefficients of the thus-determined decomposition level is immediately smaller than the size of decompressed image determined by said size
15 determining part.

20 39. The apparatus as claimed in claim 37, wherein the decomposition level determined by said level determining part is such that the size of the subband transform coefficients of the thus-determined decomposition level is immediately larger than the size
25 of decompressed image determined by said size

determining part.

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40. The apparatus as claimed in claim 37,
further comprising a size-change part performing size-
change operation on the decompressed image obtained by
said decompressing part so as to obtain an image having
10 a size equal to the size determined by said size
determining part.

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41. The apparatus as claimed in claim 40,
further comprising an interpolation part performing
interpolation operation so as to obtain a bitmap image
having the size equal to the size determined by said
20 size determining part from the size-changed image
obtained by said size-change part.

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42. The apparatus as claimed in claim 41,
wherein said interpolation part performs linear
interpolation.

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43. The apparatus as claimed in claim 41,
wherein said interpolation part uses pixel values of
10 pixels near pixels included in the decompressed image.

15 44. An image decompressing apparatus
comprising:

a size determining part determining a size of
a decompressed image;

a level determining part determining a
20 decomposition level up to which decomposition-level-type
inverse wavelet transform is performed; and

a decompressing part decompressing given
wavelet transform coefficients up to the decomposition
level determined by said level determining part,

25 wherein said level determining part determines

the decomposition level such that wavelet transform coefficients in the thus-determined decomposition level have a size further smaller than the size of the decomposition level immediately smaller than the size of the decomposed image determined by said size determining part.

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45. The apparatus as claimed in claim 44, further comprising a lower-frequency component producing part producing a lower-frequency component from the LL subband coefficients in the last decomposition level when the size determined by said step a) is smaller than the size of said LL subband in the last decomposition level.

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46. The apparatus as claimed in claim 45, wherein said lower-frequency component producing part utilizes the decomposition-level-type wavelet transform formula used in the relevant system as it is.

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47. The apparatus as claimed in claim 45,
wherein said lower-frequency component producing part
takes averages of adjacent pixels

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48. The apparatus as claimed in claim 44,
further comprising a size-change part performing size-
10 change operation on the decompressed image obtained by
said decompressing part so as to obtain an image having
a size equal to the size determined by said size
determining part.

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49. The apparatus as claimed in claim 48,
further comprising an interpolation part performing
20 interpolation operation so as to obtain a bitmap image
having the size equal to the size determined by said
size determining part from the size-changed image
obtained by said size-change part.

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50. The apparatus as claimed in claim 44,
wherein the wavelet transform coefficients to be
decompressed by said decompressing part comprise a code
stream coded in accordance with JPEG2000, Image Coding
5 System (ISO/IEC, FCD 15444-1).

10 51. An image decompressing apparatus
comprising:
a size determining part determining a size of
a decompressed image;
a level determining part determining a
15 decomposition level up to which decomposition-level-type
inverse subband transform is performed; and
a decompressing part decompressing given
subband transform coefficients up to the decomposition
level determined by said level determining part,
20 wherein said level determining part determines
the decomposition level such that subband transform
coefficients in the thus-determined decomposition level
have a size further smaller than the size of the
decomposition level immediately smaller than the size of
25 the decomposed image determined by said size determining

part.

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52. The apparatus as claimed in claim 51,
further comprising a lower-frequency component producing
part producing a lower-frequency component from the LL
subband coefficients in the last decomposition level
10 when the size determined by said size determining part
is smaller than the size of said LL subband of the last
decomposition level.

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53. The apparatus as claimed in claim 52,
wherein said lower-frequency component producing part
utilizes the decomposition-level-type wavelet transform
20 formula used in the relevant system as it is.

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54. The apparatus as claimed in claim 52,

wherein said lower-frequency component producing part takes averages of adjacent pixels.

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55. The apparatus as claimed in claim 51, further comprising a size-change part performing size-change operation on the decompressed image obtained by said decompressing part so as to obtain an image having a size equal to the size determined by said size determining part.

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56. The apparatus as claimed in claim 55, further comprising an interpolation part performing interpolation operation so as to obtain a bitmap image having the size equal to the size determined by said size determining part from the size-changed image obtained by said size-change part.

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57. An information recording medium recording therein a software program for causing a computer to execute the steps of:

- a) determining a size of a decompressed image;
- 5 b) determining a decomposition level up to which decomposition-level-type inverse wavelet transform is performed; and
- c) decompressing given wavelet transform coefficients up to the decomposition level determined by
- 10 said step b),
- wherein said step b) determines the decomposition level such that wavelet transform coefficients in the thus-determined decomposition level
- have a size equal to or nearest to the size of the
- 15 decomposed image determined by said step a).

20 58. An information recording medium recording therein a software program for causing a computer to execute the steps of:

- a) determining a size of a decompressed image;
- b) determining a decomposition level up to
- 25 which decomposition-level-type inverse subband transform

is performed; and

c) decompressing given subband transform coefficients up to the decomposition level determined by said step b),

5 wherein said step b) determines the decomposition level such that subband transform coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said step a).

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59. An information recording medium recording
15 therein recording therein a software program for causing a computer to execute the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to which decomposition-level-type inverse wavelet transform

20 is performed; and

c) decompressing given wavelet transform coefficients up to the decomposition level determined by said step b),

 wherein said step b) determines the
25 decomposition level such that wavelet transform

coefficients in the thus-determined decomposition level have a size further smaller than the size of the wavelet transform coefficients in the decomposition level immediately smaller than the size of the decomposed image determined by said step a).

60. An information recording medium recording therein a software program for causing a computer to execute the steps of:
- a) determining a size of a decompressed image;
 - b) determining a decomposition level up to which decomposition-level-type inverse subband transform is performed; and
 - c) decompressing given subband transform coefficients up to the decomposition level determined by said step b),
- wherein said step b) determines the decomposition level such that subband transform coefficients in the thus-determined decomposition level have a size further smaller than the size of the subband transform coefficients in the decomposition level immediately smaller than the size of the decomposed

